

Se. No. 09/913,999
Docket No. FA1022 US NA

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The following listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1-12 (canceled)

Claim 13 (currently amended): An electrically conductive wire coated with a curable coating composition ~~for electrical conductors~~, comprising:

- (A) 1-60 wt.% of at least one reactive particle, said reactive particles having an average radius ranging from 1 nm to 300 nm, wherein said reactive particles are based on an element-oxygen network, and wherein the elements are selected from the group consisting of silicon, zinc, aluminum, tin, boron, germanium, gallium, lead, the transition metals, and lanthanides and actinides;
- (B) 0-90 wt.% of at least one binder having at least one functional group capable of chemically reacting with the reactive particle of component (A); and
- (C) 0-95 wt.% of at least one additional component selected from the group consisting of additive, solvent, pigment and filler; wherein the total wt.% of (A) + (B) + (C) equals 100 wt.%;

wherein the element-oxygen network of said reactive particles has at least one reactive function R_1 and optionally at least one non-reactive and/or at least one partially reactive functions R_2 and R_3 bound by way of an oxygen of the element oxygen-network to the surface of said reactive particles, the reactive function R_1 being contained in an amount up to 98 wt.% of said reactive particles and the non-reactive and/or partially reactive functions R_2 and R_3 being contained in an amount from 0-97 wt.% of said reactive particles;

wherein R_1 comprises radicals selected from the group consisting of metal acid esters, NCO, urethane groups, epoxide groups, epoxy, carboxylic acid

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anhydride, C=C double bond systems, OH, alcohols bound by way of oxygen, alcohols bound by way of esters, alcohols bound by way of ethers, chelating agents, COOH, NH₂, NHR₄, and reactive resin components;

wherein R₂ comprises radicals selected from the group consisting of aromatic compounds, aliphatic compounds, fatty acid derivatives, esters, and ethers;

wherein R₃ comprises resin radicals;

wherein R₄ comprises radicals selected from the group consisting of acrylate, phenol, melamine, polyurethane, polyester, polyester imide, polysulfide, epoxide, polyamide, polyvinyl formal resins, aromatic compounds, aliphatic compounds, esters, ethers, alcoholates, fats, and chelating agents;

wherein said reactive particles of component A require the presence of the at least one binder of component B when the reactive function R₁ comprises radicals selected from the group consisting of metal acid esters, NCO, urethane groups, epoxide groups, epoxy, carboxylic acid anhydride, C=C double bond systems, OH, alcohols bound by way of oxygen, alcohols bound by way of esters, alcohols bound by way of ethers, chelating agents, COOH, NH₂, and NHR₄;

whereby, after application and curing of the curable coating composition, the element-oxygen network becomes an inorganic-organic-oxygen network providing a cured coating with high partial discharge resistance.

Claim 14 (currently amended): The electrically conductive wire A-curable coating composition according to of claim 13, wherein the reactive function R₁ comprises radicals selected from the group consisting of OTi(OR₄)₃, OZr(OR₄)₃, acetyl acetonate, 2-hydroxyethanolate, and diethylene glycolate.

Claim 15 (currently amended): The electrically conductive wire A-curable coating composition according to of claim 13, wherein R₃ comprises radicals selected from the group consisting of polyester imides and THEIC polyester imides.

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Claim 16 (currently amended): ~~The electrically conductive wire A-curable coating composition according to~~ of claim 13, wherein R₄ comprises radicals selected from the group consisting of acrylate resins, aminotriethanolate, acetyl acetate, polyurethane resins, and butyl diglycolate.

Claim 17 (currently amended): ~~The electrically conductive wire A-curable coating composition according to~~ of claim 13, wherein the reactive particles of component (A) have a network of elements selected from the group consisting of titanium, aluminum, silicon, and zirconium bound to the oxygen of the element-oxygen network of said reactive particles.

Claim 18 (currently amended): ~~The electrically conductive wire A-curable coating composition according to~~ of claim 13, wherein the reactive particles of component (A) have an average radius of 2-80 nm.

Claim 19 (currently amended): ~~The electrically conductive wire A-curable coating composition according to~~ of claim 13, further comprising monomeric or polymeric element-organic compounds selected from the group consisting of orthotitanic acid ester, orthozirconic acid ester, titanium tetralactate, hafnium tetrabutoxide, tetraethyl silicate and silicone resins.

Claim 20 (currently amended): A process for coating the electrically conductive wire of claim 13 a metal conductor comprising the steps of applying the a curable coating composition according to claim 13 comprising (A) 1-60 wt.% of at least one reactive particle, said reactive particles having an average radius ranging from 1 nm to 300 nm, wherein said reactive particles are based on an element-oxygen network, and wherein the elements are selected from the group consisting of silicon, zinc, aluminum, tin, boron, germanium, gallium, lead, the transition metals, and lanthanides and actinides;
(B) 0-90 wt.% of at least one binder having at least one functional group capable of chemically reacting with the reactive particle of component (A); and

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(C) 0-95 wt.% of at least one additional component selected from the group consisting of additive, solvent, pigment and filler; wherein the total wt.% of (A) + (B) + (C) equals 100 wt.%;

wherein the element-oxygen network of said reactive particles has at least one reactive function R_1 and optionally at least one non-reactive and/or at least one partially reactive functions R_2 and R_3 bound by way of an oxygen of the element oxygen-network to the surface of said reactive particles, the reactive function R_1 being contained in an amount up to 98 wt.% of said reactive particles and the non-reactive and/or partially reactive functions R_2 and R_3 being contained in an amount from 0-97 wt.% of said reactive particles;

wherein R_1 comprises radicals selected from the group consisting of metal acid esters, NCO, urethane groups, epoxide groups, epoxy, carboxylic acid anhydride, C=C double bond systems, OH, alcohols bound by way of oxygen, alcohols bound by way of esters, alcohols bound by way of ethers, chelating agents, COOH, NH_2 , NHR_4 , and reactive resin components;

wherein R_2 comprises radicals selected from the group consisting of aromatic compounds, aliphatic compounds, fatty acid derivatives, esters, and ethers;

wherein R_3 comprises resin radicals;

wherein R_4 comprises radicals selected from the group consisting of acrylate, phenol, melamine, polyurethane, polyester, polyester imide, polysulfide, epoxide, polyamide, polyvinyl formal resins, aromatic compounds, aliphatic compounds, esters, ethers, alcoholates, fats, and chelating agents;

wherein said reactive particles of component A require the presence of the at least one binder of component B when the reactive function R_1 comprises radicals selected from the group consisting of metal acid esters, NCO, urethane groups, epoxide groups, epoxy, carboxylic acid anhydride, C=C double bond systems, OH, alcohols bound by way of oxygen, alcohols bound

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by way of esters, alcohols bound by way of ethers, chelating agents, COOH, NH₂, and NHR₄; and
curing said coating composition at an elevated temperature to produce a cured coating;
whereby, after applying and curing the curable coating composition, the element-oxygen network becomes an inorganic-organic-oxygen network providing the cured coating with high partial discharge resistance.

Claim 21 (canceled).

Claim 22 (currently amended): A The process according to claim 20 24, wherein the electrically conductive wire is pre-coated.

Claim 23 (previously presented): A process according to claim 20, wherein the coating composition is applied as a single-layer.

Claim 24 (previously presented): A process according to claim 20, wherein the coating composition is applied as a base coat, middle coat, and/or top coat.

Claim 25 (canceled).

Claim 26 (canceled).

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